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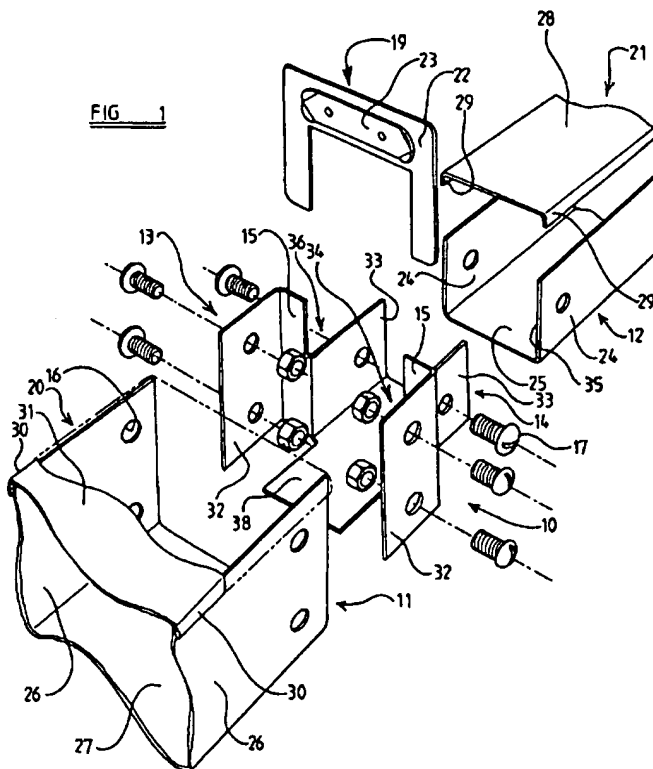
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(56) Documents Cited
GB 0517209 A
Walsall Cable Trunking Systems (November 1987)
page 6

(58) Field of Search
UK CL (Edition Q) H2C CCD
INT CL⁶ H02G 3/06
Trade Catalogues

(54) Abstract Title
Reducer connection

(57) A connection between first and second members 20,21, each of which has at least one side 24-27 and a removable lid 28,31 forming an enclosure, with the first member having a greater cross-section than the second, allows the members to be connected end to end with a removable closure member 19 at least partly closing the end of the first member. Preferably the members are trunking members. The connection may include a reducer coupling 36 which may be engaged by a retaining means 23 on the closure member.



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FIG 1

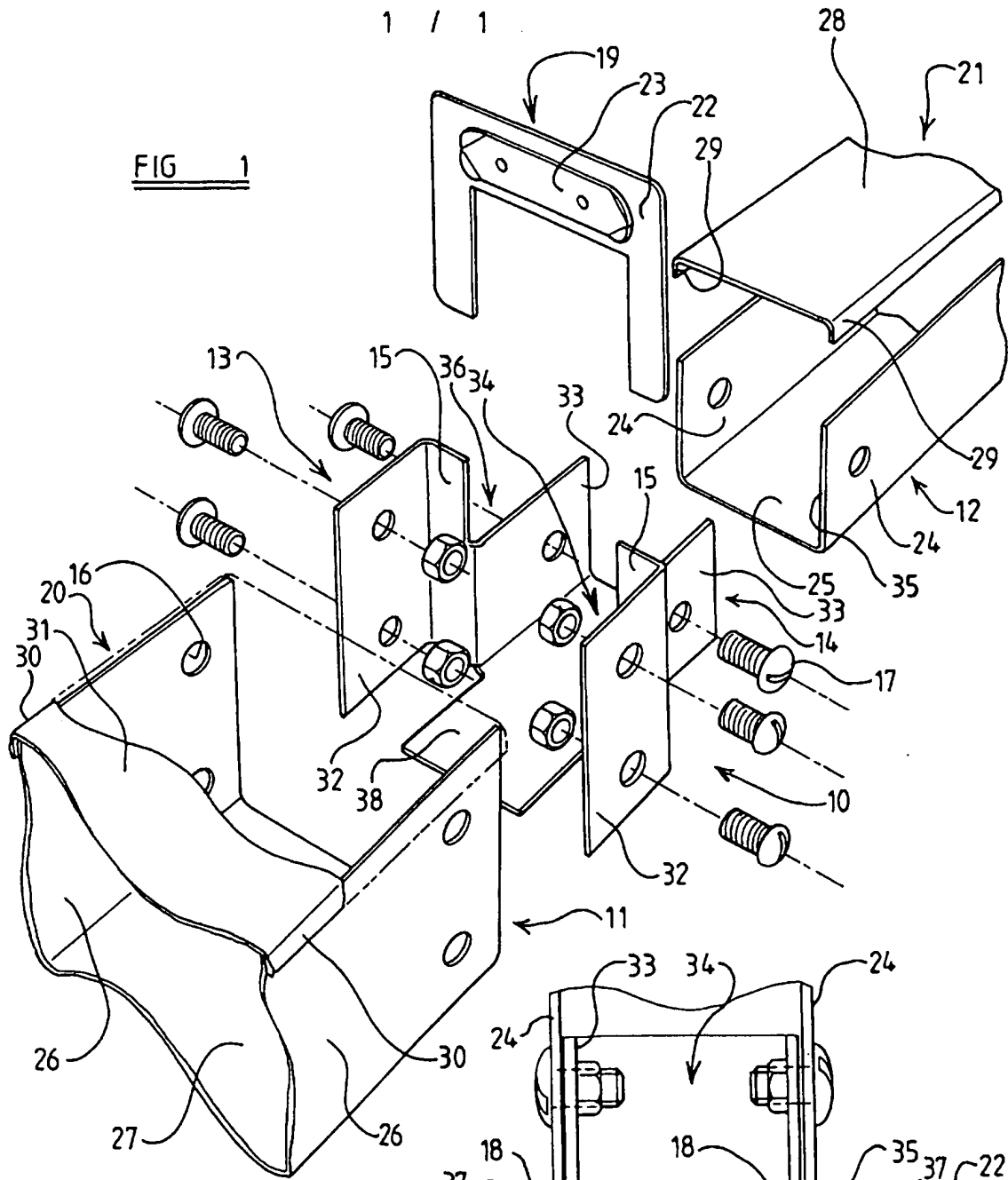
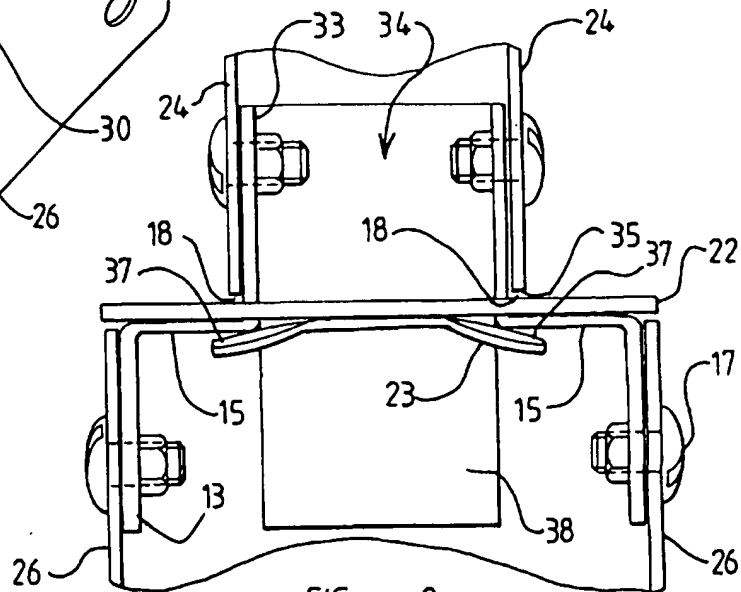


FIG 2



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DT01 Rec'd PCT/PTC 23 DEC 2004

Title: Connection

Description of Invention

This invention relates to a connection, and more particularly, but not exclusively, to a connection between two trunking members of different cross-sectional area.

Where cables such as electrical cables or optical fibres, run across a space, they may be held and supported in trunking. In industries such as the food industry, it is desirable that the trunking is sealed from the surrounding environment to improve hygiene standards by preventing ingress of food in the trunking thus avoiding subsequent infestation and contamination. To achieve this, it is known that the trunking, which is typically of a channel shape, is closed with a removable lid. In other trunking applications it is desirable to prevent the ingress of other contaminating matter.

Where two trunking members of differing cross section are arranged end to end, there are two known means of forming a connection between them. The first is to provide a channel shaped connector whose cross-section decreases from that of the larger member to that of the smaller member, there being a tapered lid to close the channel. Thus cables can be laid into the channel, across the connection. However, this connector is complicated and expensive to manufacture.

The second is to use a stepped reducer coupling which is connected to both of the trunking members. However, there would be a gap at the connection where the end of the larger cross section trunking member is exterior to the end of the smaller cross section trunking member. In order to close this gap, the reducer coupling incorporates a closure member. Thus, when the lids are in place on the trunking members, the trunking is closed. However, the closure member forms a bridge across the channels of the

trunking members, and so when the lids are removed it is not possible to lay cables into the channels across the connection. Instead, the cables must be fed underneath the closure member. This creates extra work for the person laying the cables and can be difficult to achieve when very large lengths of cable are used.

According to one aspect of this invention we provide a connection between first and second members, the first member having a greater cross-section than the second member, the first and second members each including at least one side and having a removable lid, the at least one side and lid defining an enclosure, and the first and second members being connected end to end, characterised in that the end of the first member which is exterior to the end of the second member is closed at least partly, by a closure member which is removable.

By virtue of the connection, when the lids and closure member are removed, cables or other filaments can be laid in the first and second members across the connection. Thereafter, the members can again be closed by first replacing the closure member and then replacing the lids. This invention thus provides a means of connecting two, for example, trunking members of different cross-section, which is simple to produce and which allows, for example, cables to be laid across the connection.

The connection may include a reducer coupling which has a first part which is fastened to the first larger cross section member and a second part which is fastened to the second smaller cross section member.

The closure member may be adapted to co-operate with the first and second parts of the reducer coupling and may for example be received in a groove formed between the ends of the first and second members.

The closure member may include a retaining means which co-operates with the reducer coupling, for example the first part of the reducer coupling, to retain the closure member relative to the reducer coupling.

The first and second members are preferably each of channel shape with bases of the channels being generally in-line so that at least when the closure member is removed, a continuous channel, without any steps or the like, is provided. However the first and second members may be of other cross-sections.

The first and second members may be trunking members to hold an elongate element such as an electrical cable.

According to a second aspect of the invention, we provide a method of forming a connection between first and second members, the first and second members each including at least one side and having a removable lid, the at least one side and lid defining an enclosure, and the first member having a greater cross-section than the second member, the method including connecting the first and second members end to end, and inserting a removable closure member to close, at least partly, the end of the first member which is exterior to the end of the second member.

The connection formed by the method of the second aspect of the invention may have any of the features of the connection described in the first aspect of the invention.

According to a third aspect of the invention, we provide a method of laying elements across a connection between first and second members arranged end to end, the first and second members each including at least one side and having a removable lid, the at least one side and lid defining an enclosure, and the first member having a greater cross-section than the second member, there being a closure member at least partly closing the end of the first member which is exterior to the end of the second member, the method including removing the lids and the closure member, and laying an element in the members across the connection, and thereafter replacing the closure member and lids to close the first and second members and the at least part of the end of the first member which is exterior to the end of the second member.

The invention will now be described with reference to the accompanying drawings in which:

Figure 1 is a perspective view of a connection in accordance with the invention;

Figure 2 is a plan view of the connection member of figure 1 shown assembled.

Referring to the figures, there is shown a reducer coupling 10 which connects first 11 and second 12 trunking members, the trunking members 11, 12 each having two sides 26, 24 respectively, and a base 27, 25 respectively, which together form an elongate channel which is open at both ends. The first trunking member 11 has a larger cross section than the second trunking member 12. The reducer coupling 10 has a first part 13, having two sides 32 and a base 38 which fit inside the first trunking member 11 of larger cross-section, and a second part 14, having two sides 33 and a base 34 to form a channel, which fits inside the second trunking member 12 of smaller cross-section. The bases 38, 34 assist in correctly aligning the trunking members 11, 12 and ensure that there is no gap between the bases 27, 25 of the trunking members 11, 12 into which contaminating matter may ingress.

The reducer coupling 10 is fabricated from a single metal sheet, stamped and bent to form the two parts 13, 14 with two connection strips 15 joining the two parts 13, 14. There are holes 16 provided in the first and second trunking members 11, 12 and the first and second parts 13, 14 of the reducer coupling 10. The first part 13 of the reducer coupling 10 is fastened inside the first trunking member 11, and the second part 14 of the reducer coupling 10 is fastened inside the second trunking member 12 using nuts and bolts 17 passing through the holes 16. The invention is not restricted to the use of nuts and bolts. Other fastening means, such as a plunge fastening method or self-tapping fasteners may be used. The second trunking member 12 is fastened in such a position, that an end 35 thereof is spaced slightly from the connection

strips 15 of the reducer coupling 10. Thus there is a groove 18 formed either side of the sides 33 of the second part 14 of the reducer coupling 10 between the end 35 of the second trunking member 12 and the connection strips 15.

There is a gap, indicated at 36, where the first trunking member 11 of larger cross-section is exterior to the second trunking member 12 of smaller cross-section. The gap 36 is closed by fitting a closure member 19 into the groove 18 around the second part 14 of the reducer coupling 10 between the second trunking member 12 and the connection strips 15 of the reducer coupling 10. The trunking members 11, 12 may then be closed by fitting respective lids 20, 21, each lid 20, 21 having a top 28, 31 and two lips 29, 30, which may engage with the upper peripheries of the trunking members 11, 12, to secure the lids 20, 21 to the members 11, 12.

The closure member 19 includes a U-shaped plate 22, fabricated from a sheet of metal by means such as cutting or stamping, and a retaining means 23 joined, by means such as welding or otherwise, to the plate 22. The ends 37 of the retaining means 23 are not attached to the plate and are bent away from the plate 22. In use, the connection strips 15 of the reducer coupling 10 are fitted between the bent ends 37 of the retaining means 23 and the plate 22, as shown in Figure 2. In this way, the retaining means 23 retains or assists in retaining the closure member 19 relative to the reducer coupling 10.

The invention is not restricted to containing a retaining means 23 as described above. The lid 30 on the first part 13 and/or second part 14 of the reducer coupling 10 may co-operate with the closure member 19 to assist in retaining the closure member 19 relative to the reducer coupling 10. Alternatively or additionally to any of the above, the closure member 19 may be fastened to the reducer coupling, for example, with nuts and bolts or other fasteners which may be released to allow the closure member 19 to be removed. Alternatively, any combination of these retaining methods may be used.

The invention is not restricted to use with trunking members 11,12 having two sides 24, 26 and a base 25, 27 to form a channel. For example, the trunking members 11, 12 may have a base and one side, and be positioned against a wall, the wall forming a second side of a channel. Alternatively, the trunking may consist of a flat strip, and be positioned in a corner, the corner forming a base and other side of a channel.

The invention is not restricted to the reducer coupling 10 where present, or the closure member 19 being formed out of metal using the fabrication means described above. Other materials, for example plastics, and other fabrication methods, such as injection moulding, may be used.

The invention is not restricted for use with a reducer coupling as described above or with any reducer coupling at all. The first and second trunking members 11, 12 may be connected directly, by means such as welding, and the closure member 19 adapted to fit around the second member 12.

The invention is not restricted to use with trunking but may be used with any other members into which an element, mainly an elongate element, such as an electrical cable, optical fibre, piping or tubing, is laid.

The features disclosed in the foregoing description, or the following claims, or the accompanying drawings, expressed in their specific forms or in terms of a means for performing the disclosed function, or a method or process for attaining the disclosed result, as appropriate, may, separately or in any combination of such features, be utilised for realising the invention in diverse forms thereof.

CLAIMS

1. A connection between first and second members, the first member having a greater cross-section than the second member, the first and second members each including at least one side and having a removable lid, the at least one side and lid defining an enclosure, and the first and second members being connected end to end, characterised in that the end of the first member which is exterior to the end of the second member is at least partly closed by a closure member which is removable.

2. A connection as claimed in claim 1 including a reducer coupling which has a first part which is fastened to the first larger cross section member and a second part which is fastened to the second smaller cross section member.

3. A connection, as claimed in claim 2, wherein the closure member is fabricated to engage with the first and second parts of the reducer coupling.

4. A connection, as claimed in claim 3, wherein the closure member includes a retaining means which co-operates with the reducer coupling, to retain the closure member relative to the reducer coupling.

5. A connection, as claimed in any preceding claim, wherein the first and second members are each of channel shape with bases of the channels being generally in-line so that at least when the closure member is removed, a continuous channel, without any steps or the like, is provided.

6. A connection, as claimed in any preceding claim, wherein the first and second members are trunking members to hold an elongate element.

7. A method of forming a connection between first and second members, the first and second members each including at least one side and having a removable lid, the at least one side and lid defining an enclosure, and the first member having a greater cross-section than the second member, characterised in that the first and second members are connected end to end, and a removable closure member is inserted to close, at least partly, the end of the first member which is exterior to the end of the second member.

8. A method of forming a connection substantially as hereinbefore described with reference to and as shown in the accompanying drawings.

9. A method of laying elements across a connection between first and second members arranged end to end, the first and second members each including at least one side and having a removable lid, the at least one side and lid defining an enclosure, and the first member having a greater cross-section than the second member, there being a closure member at least partly closing the end of the first member which is exterior to the end of the second member, characterised in that the method includes removing the lids and closure member, laying an element in the members across the connection, and thereafter replacing the closure member and lids to close the first and second members and the at least part of the end of the first member which is exterior to the end of the second member.

10. Any novel feature or novel combination of features as herein described and/or shown in the accompanying drawings.



Application No: GB 9905235.9
Claims searched: 1-9

Examiner: Richard Nicholls
Date of search: 19 May 1999

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.Q): H2C (CCD)

Int Cl (Ed.6): H02G 3/06

Other: Trade Catalogues

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X	GB 0517209 A (HOLLANDER) see especially figures 6-9	1-7 and 9
X	Walsall Cable Trunking Systems (November 1987) page 6 -see 'Reducer'	1,2,6,7,9

X Document indicating lack of novelty or inventive step
Y Document indicating lack of inventive step if combined with one or more other documents of same category.
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A Document indicating technological background and/or state of the art.
P Document published on or after the declared priority date but before the filing date of this invention.
E Patent document published on or after, but with priority date earlier than, the filing date of this application.